

# Anna Possner

## Curriculum Vitae

Institute for Atmospheric and Environmental Sciences

Goethe-University Frankfurt

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### Scientific interests

The study boundary layer clouds and dynamics on a process scale. In particular I focus on the identification and quantification of climate relevant processes in this region of the atmosphere. Furthermore, I branch into the field of renewable energy investigating impacts and geophysical limitations of wind energy.

### Education

- 2011–2014: **PhD**, *ETH*, Zurich, Switzerland.  
Doctoral studies in Atmospheric and Climate Science.  
Thesis: “The dynamics and microphysics of atmospheric ship tracks at the mesoscale”.
- 10/2010–  
03/2011: **Master Thesis**, *MPI for Meteorology*, Hamburg, Germany.  
Thesis under supervision of Hauke Schmidt (MPI) and David Stevenson (University of Edinburgh) on “The resolution dependency of simulated tracer transport into the Antarctic polar vortex in ECHAM6”.
- 2006–2011: **MPhys**, *University of Edinburgh*, Edinburgh, Scotland.  
Master in “Mathematical Physics” at the University of Edinburgh.
- 1999–2006: **Abitur**, *Adolf Reichwein Gymnasium*, Jena, Germany.  
higher education entrance qualification
- 2003: **visiting student**, *Taylor Allderdice High School*, Pittsburgh, USA.

### Professional Experience

- 2019–present **Group Leader**, *Goethe University*, Frankfurt, Germany.  
Research area: atmospheric physics and climate
- 2016–2018 **PostDoc**, *Carnegie*, Stanford, USA.  
Researcher in atmospheric sciences focusing on cloud processes and geophysical limitations of wind energy
- 2014–2016 **PostDoc**, *ETH*, Zurich, Switzerland.  
Researcher in atmospheric sciences focusing on ship tracks in warm- and mixed-phase clouds
- 2011–2014 **PhD Candidate**, *ETH*, Zurich, Switzerland.  
Main foci of research:  
1) Boundary layer processes and parameterisations.  
2) Aerosol cloud interactions in warm-phase ship tracks.
- 2009 **Intern (3 months) at MPI for Meteorology**, *MPI*, Hamburg, Germany.  
Researching global CAPE distributions to better understand convective triggering in ECHAM5 (Reference below).

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## Teaching/Supervision Experience

- 2019–present **Current PhD students.**  
1) Jessica Danker: retrieved scales organisation of mixed-phase clouds from remote sensing  
2) Veeramanikandan Ramadoss: high-resolution simulations of Southern Ocean mixed-phase clouds
- present **Bachelor student projects.**  
regional changes in cloud water adjustment
- 2016 **Lecturer**, Summer school on "Aerosol-Cloud Interactions", ICTP, Trieste, Italy.
- 2016 – **Co-supervision of PhD student.**  
present Gesa Eirund: Cloud resolving simulations of Arctic mixed-phase clouds
- 2012–2015 **Supervision of master students.**  
worked with 3 master students on:  
1) Occurrence and forecast of low stratus clouds over Switzerland  
2) Resilience of Arctic mixed-phase clouds during M-PACE  
3) Impact of Residential Woodburning on the Swiss Climate.
- 2012–2013 **Assistant**, Master course by Prof. Christoph Schär and Prof. U. Lohmann: *Numerical Modelling of Weather and Climate*, **including lectures**, ETH Zurich.
- 2011–2013 **Assistant**, Bachelor course by Dr. Olaf Stetzer: *Observational networks*, ETH Zurich.

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## Selected Publications

- N. Bellouin et al. [incl. **A. Possner**] (2019): Bounding global aerosol radiative forcing of climate change, *Rev. Geophys.*, accepted.
- **Possner, A.**, et al. (2018). The efficacy of aerosol-cloud radiative perturbations from near-surface emissions in deep open-cell stratocumuli, *Atmos. Chem. and Phys.*, doi:10.5194/acp-18-17475-2018.
- R. Stevens et al. [incl. **A. Possner**](2018): A model intercomparison of CCN-limited tenuous clouds in the high Arctic, *Atmos. Chem. and Phys.*, doi:10.5194/acp-18-11041-2018.
- **Possner, A.**, A. Ekman and U. Lohmann (2017). Cloud response and feedback processes in stratiform mixed-phase clouds perturbed by ship exhaust, *Geophys. Res. Lett.*, doi:10.1002/2016GL071358.
- **Possner, A.** and K. Caldeira (2017). Geophysical potential for wind energy over the open oceans, *PNAS*, doi:10.1073/pnas.1705710114.
- **Possner, A.**, E. Zubler and U. Lohmann and C. Schär (2015). Real-case simulations of aerosol cloud interactions in ship tracks over the Bay of Biscay, *Atmos. Chem. and Phys.*, doi:10.5194/acp-15-2185-2015.

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## Awards and Funding

- 2018 Awarded MOPGA-GRI 4-year group starter grant (1M €, project start: 2018)
- 2017 Co-PI on Swedish Research Council proposal on: "Mixed-Phase Clouds in the Arctic and Nordic Regions: Influence of Shipping" (project start: 2018).

- 2015 Co-PI on Swiss Supercomputing Center Production Proposal on: “Evaluating Aerosol Cloud Interactions at the Regional Scale” (1.6M SU for 2 years).
- 2012 Swiss Supercomputing Center: Poster Award on: “Cloud Resolving Climate Simulations”.
- 2010 University of Edinburgh: Class Medal for Mathematical Physics Senior Honours (top of class).
- 2007,2008 University of Edinburgh: Lang Scholarship and Neil Arnott Scholarship for academic achievement (top 5% of class).

## Reviewing activities

- 2014 – 2017 Reviewer for: Atmospheric Chemistry and Physics (ACP), Journal of Geophysical Research (JGR), Q. J. Roy. Met. Soc. (QJRMS), Geoscientific Model Development (GMD), Environmental Research Letters, Nature

## Skills

- Languages German (native), English (fluent), French (basic)
- Programming *Proficient*: Fortran, NCL, CDO, CSH, BASH, SVN. *Basic*: Python, C++, IDL.
- Modeling *development*: COSMO, *coding and application*: ECHAM, CESM, ICON.

## Selected Presentations

- **EAC 2019**, Gothenburg, Sweden. “Processes Constraining Aerosol-Cloud Interactions of Arctic Mixed-Phase Clouds Inferred from High-Resolution Simulations of two Arctic Cases” (**invited**).
- **AGU Annual Meeting 2017**, New Orleans, USA. “Geophysical Potential for Wind Energy over the Open Oceans” (**invited**).
- **Stockholm University 2017**, Stockholm, Sweden. “Ship Tracks: A framework for ACI evaluation in marine stratocumulus” (**invited**).
- **Meteorology and Climate - Modeling for Air Quality 2015**, UC Davis, Sacramento, USA. “Ship tracks: a framework for ACI evaluation in warm-phase stratocumulus” (**invited**).
- **Symposium on coupled chemistry-meteorology/climate modeling 2015**, WMO Headquarters in Geneva, Switzerland. “Uncertainties in climate prediction: The influence of aerosol particles on clouds and climate”.

## References

References are available upon request.